

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method of producing a transgenic alkaloid producing poppy plant comprising the steps of:

- 1) introducing exogenous nucleic acid for conferring a selected property on the transgenic plant into transformable poppy plant material in the presence of a buffering agent which prevents, reduces the rate of or delays a rise in pH of the plant material or culture medium for culturing of the plant material, from a desired pH level;
- 2) culturing the plant material in the presence of the buffering agent; and
- 3) generating the transgenic plant from the plant material.

2. (Currently amended) A method of transforming an alkaloid producing poppy plant to provide a transgenic plant comprising the step of introducing exogenous nucleic acid for conferring a selected property on the transgenic plant into transformable plant material of the poppy plant in the presence of a buffering agent which prevents, reduces the rate of or delays a rise in pH of the plant material, or culture medium for culturing of the plant material from a desired pH level.

3. (Currently amended) A method of producing a transgenic alkaloid producing poppy plant from transformable poppy plant material harbouring exogenous nucleic acid for conferring a selected property on the transgenic plant, comprising the steps of:

- 1) culturing the plant material in culture medium in the presence of a buffering agent which prevents, reduces the rate of or delays a rise in pH of the culture medium or the plant material; and
- 2) generating the transgenic plant from the plant material.

4. (Previously presented) The method according to claim 2 wherein the plant is an alkaloid producing *Eschscholtzia* species.

5. (Previously presented) The method according to claim 2 wherein the transgenic plant is a *Papaver* species.

6. (Previously presented) The method according to claim 5 wherein the *Papaver* species is *Papaver somniferum*.

7. (Currently amended) The method according to claim 2 wherein the transformable poppy plant material is derived from seeds, imbibed seeds or seedling parts of the plant.

8. (Currently amended) The method according to claim 2 wherein the transformable poppy plant material is selected from the group consisting of seed explant, seedling explant, type I callus, type II callus, somatic embryogenic callus, any culture which gives rise to somatic embryos, any culture which gives rise to shoots and plant tissues.

9. (Previously presented) The method according to claim 2 wherein the rise in pH is prevented or delayed.

10. (Previously presented) The method according to claim 2 wherein the pH is maintained between pH 5.5 and 6.5.

11. (Previously presented) The method according to claim 2 wherein the buffering agent is selected from the group consisting of 2-[N-morpholino]ethane sulfonic acid buffer (MES), N-[2-acetamido]-2-iminodiacetic acid buffer (ADA) and bis[2-hydroxyethyl]iminotris-[hydroxymethyl]methane buffer (BIS-TRIS), and a buffer having an ammonium and nitrate ions content in a predetermined ratio.

12. (Previously presented) The method according to claim 2 wherein the exogenous nucleic acid is introduced into plant cells by a plant transformation agent.

13. (Previously presented) The method according to claim 12 wherein the transformation agent is *Agrobacterium tumefaciens*.

14. (Previously presented) The method according to claim 2 wherein the exogenous nucleic acid is introduced using a mechanical method.

15. (Previously presented) The method according to claim 14 wherein the mechanical method is microparticle bombardment.

16. (Previously presented) The method according to claim 4 or claim 5 wherein the exogenous nucleic acid encodes a mRNA or protein that confers on the transgenic plant a property selected from the group consisting of:

increased alkaloid yield relative to the native alkaloid producing plant, increased herbicide resistance relative to the native alkaloid producing plant, increased soil acidity tolerance relative to the native alkaloid producing plant, increased disease resistance relative to the native alkaloid producing plant, increased insect resistance relative to the native alkaloid producing plant, increased growth rate relative to the native alkaloid producing plant, improved flowering properties relative to the native alkaloid producing plant, increased frost tolerance relative to the native alkaloid producing plant and altered alkaloid proportions relative to the native alkaloid producing plant.

17 (Previously presented) The method according to claim 4 or claim 5 wherein the exogenous nucleic acid encodes a mRNA or protein that confers on the transgenic poppy the property of altered alkaloid proportions relative to the native alkaloid producing plant.

18. (Previously presented) The method according to claim 4 or claim 5 wherein the exogenous nucleic acid encodes a mRNA or protein that confers on the transgenic poppy the property of herbicide resistance.

19. (Previously presented) The method according to claim 18 wherein the herbicide resistance is selected from the group consisting of Basta herbicide resistance, glyphosate resistance, bromoxynil resistance and sulfonylurea resistance.

20-29. Canceled.

30. (New) A method of producing a transgenic alkaloid producing poppy plant of the *Papaver somniferum* species comprising the steps of:

- 1) introducing exogenous nucleic acid for conferring a selected property on the transgenic plant into transformable poppy plant material of the *Papaver somniferum* species in the presence of a buffering agent which maintains the pH of the plant material or culture medium for culturing the plant medium within a range of pH 5.5 to pH 6.5;
- 2) culturing the plant material in the presence of the buffering agent; and

3) generating the transgenic plant from the plant material.

31. (New) A method of transforming an alkaloid producing poppy plant of the *Papaver somniferum* species comprising the step of introducing exogenous nucleic acid for conferring a selected property on the transgenic plant into transformable plant material of the poppy plant in the presence of a buffering agent which maintains the pH of the plant material or culture medium for culturing the plant medium within a range of pH 5.5 to pH 6.5.

32. (New) A method of producing a transgenic alkaloid producing poppy plant of the *Papaver somniferum* species from transformable poppy plant material harbouring exogenous nucleic acid for conferring a selected property on the transgenic plant, comprising the steps of:

1) culturing the plant material in culture medium in the presence of a buffering agent which maintains the pH of the plant material or culture medium for culturing the plant medium within a range of pH 5.5 to pH 6.5; and

2) generating the transgenic plant from the plant material.

33. (New) The method according to claim 31 wherein the transformable poppy plant material is derived from seeds, imbibed seeds or seedling parts of the plant.

34. (New) The method according to claim 31 wherein the transformable poppy plant material is selected from the group consisting of seed explant, seedling explant, type I callus, type II callus, somatic embryogenic callus, any culture which gives rise to somatic embryos, any culture which gives rise to shoots and plant tissues.

35. (New) The method according to claim 31 wherein the buffering agent is selected from the group consisting of 2-[N-morpholino]ethane sulfonic acid buffer (MES), N-[2-acetamido]-2-iminodiacetic acid buffer (ADA) and bis[2-hydroxyethyl]iminotris-[hydroxymethyl]methane buffer (BIS-TRIS), and a buffer having an ammonium and nitrate ions content in a predetermined ratio.

36. (New) The method according to claim 31 wherein the exogenous nucleic acid is introduced into plant cells by a plant transformation agent.

37. (New) The method according to claim 36 wherein the transformation agent is *Agrobacterium tumefaciens*.

38. (New) The method according to claim 31 wherein the exogenous nucleic acid is introduced using a mechanical method.

39. (New) The method according to claim 38 wherein the mechanical method is microparticle bombardment.

40. (New) The method according to claim 31 wherein the exogenous nucleic acid encodes a mRNA or protein that confers on the transgenic plant a property selected from the group consisting of:

increased alkaloid yield relative to the native alkaloid producing plant, increased herbicide resistance relative to the native alkaloid producing plant, increased soil acidity tolerance relative to the native alkaloid producing plant, increased disease resistance relative to the native alkaloid producing plant, increased insect resistance relative to the native alkaloid producing plant, increased growth rate relative to the native alkaloid producing plant, improved flowering properties relative to the native alkaloid producing plant, increased frost tolerance relative to the native alkaloid producing plant and altered alkaloid proportions relative to the native alkaloid producing plant.

41 (New) The method according to claim 31 wherein the exogenous nucleic acid encodes a mRNA or protein that confers on the transgenic poppy the property of altered alkaloid proportions relative to the native alkaloid producing plant.

42. (New) The method according to claim 31 wherein the exogenous nucleic acid encodes a mRNA or protein that confers on the transgenic poppy the property of herbicide resistance.

43. (New) The method according to claim 42 wherein the herbicide resistance is selected from the group consisting of Basta herbicide resistance, glyphosate resistance, bromoxynil resistance and sulfonylurea resistance.

44. (New) A method of producing a transgenic alkaloid producing poppy plant comprising the steps of:

- 1) introducing exogenous nucleic acid for conferring a selected property on the transgenic plant into transformable poppy plant material in the presence of a buffering agent which prevents, reduces the rate of or delays a rise in pH of the plant material or culture medium for culturing of the plant material, from a desired pH level of between pH 5.5 and 6.5;
- 2) culturing the plant material in the presence of the buffering agent; and
- 3) generating the transgenic plant from the plant material.

45. (New) A method of transforming an alkaloid producing poppy plant to provide a transgenic plant comprising the step of introducing exogenous nucleic acid for conferring a selected property on the transgenic plant into transformable plant material of the poppy plant in the presence of a buffering agent which prevents, reduces the rate of or delays a rise in pH of the plant material, or culture medium for culturing of the plant material; from a desired pH level of between pH 5.5 and 6.5.

46. (New) A method of producing a transgenic alkaloid producing poppy plant from transformable poppy plant material harbouring exogenous nucleic acid for conferring a selected property on the transgenic plant, comprising the steps of:

- 1) culturing the plant material in culture medium in the presence of a buffering agent which prevents, reduces the rate of or delays a rise in pH of the culture medium or the plant material from a desired pH level of between pH 5.5 and 6.5; and
- 2) generating the transgenic plant from the plant material.